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A

POPULAR TREATISE
ON THE
TEETH AND GUMS,

AND

DISEASES ATTENDANT ON THEM:

DESIGNED FOR THE USE OF FAMILIES.

BY JOHN WINCKWORTH.

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INTRODUCTION.

IN complying with the frequent solicitations of many friends to commit my observations in practice to paper, I have ventured to write this small Treatise, and endeavoured to do it in as compendious a form as possible, by avoiding, as far as it has been practicable, the multiplicity and repetition of words that too often occur in books of this kind, which, instead of effecting the desired purpose of affording information, and conferring a benefit on its readers, have been found too tedious and uninteresting to be productive of that good.

In offering the following pages to notice, I have no doubt that parts will be found of little interest to many; and as medical books in general become of value to those who are afflicted, so with this; for it cannot be supposed that persons can have at one time every evil to which the teeth are subject; yet if the various cases are explained, and remedies offered, a single benefit derived from its perusal will not, I trust, be found a useless expense of time.

INTRODUCTION.

There are some observations on the teeth, which, no doubt, many are aware have been brought forward by former Authors, to which it has not been my object to claim originality ; but simply to improve the treatment of them.

Being aware of the imperfect manner in which carious teeth are treated by many dentists, has greatly encouraged me in offering this treatise to notice, in which the improved treatment of carious teeth will be found a prominent feature ; and with the hope that this book may be instrumental in doing good, I submit it to the Public, trusting that what I have advanced may prove useful, it being the result of strict observation and careful practice.


It being impossible to avoid all technical phrases, non-professional readers will fully understand them in the explanation of the Plates.

3, EDGAR BUILDINGS, BATH,

Jan. 6, 1831.

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A

T R E A T I S E,

ETC. ETC.

CHAPTER I.

Of the Formation of Temporary, or Shedding Teeth, and Diseases attendant on the First Dentition.

SOME months before birth, the rudiments of the temporary or shedding teeth are formed, each contained in a separate vascular membrane. At the time of birth, the blood-vessels and nerves belonging to the teeth run along the cavity of the jaw with but little distinction; as the child advances in growth, each vessel has separate canals provided for them.

The divisions formed for each tooth are called the Alveolar Process, and continues its formation from the inside and outside of the jaw, and by its meeting unites, and gradually attains its proper height. Thus each tooth is divided, and obtains a separate socket, the alveolar process continuing to form till the teeth are almost covered: this gives the infant power to press its gums, in the act of suckling, without injuring the tender tooth and bone, arriving towards perfection beneath. The formation of Enamel on the teeth generally commences two or three months before birth,

and is visible in the cutting edges of the front upper and lower teeth, and on some of the points of the double ones. At birth, twenty teeth are partly formed in the two jaws, which are the temporary, or shedding teeth, all of which are replaced by more durable ones of the same number, but very different in shape and size.

The four centre upper and lower shedding teeth are called *incisores*; the adjoining tooth on either side, *cuspidati*; the next two beyond them, in each side of both jaws, the *molaes*.

The general order of teeth to make their appearance are as follows: first, the two lower incisors may be expected through the gum from the age of four to ten months; one of them appears first, and in a few days the other; in a month or two afterwards, the upper corresponding teeth make their appearance; soon after, the lateral incisors of the under jaw; in a month or two after them, the upper lateral ones appear; then follows the first molaes: the *cuspidati*, or eye-teeth, being deep-seated, seldom show themselves until a short time before the second molaes. The order for all to appear is generally in the under jaw first; thus at about two years, or two years and a half, the whole of the twenty shedding teeth are fully through the gums of a healthy child.

I have seen great deviation from this rule during my practice. The first molaes being through the gum before the lateral incisors, and again the lateral incisors, preceding the centre teeth; we call this cutting them cross, and it is owing to irregular formation and obstruction.

This effect is seldom known in rural life, which plainly shows the benefit of keeping children in the free air; it cools the mouth, and is otherwise greatly beneficial to their general health: hot

rooms are unhealthy for all persons, especially for infants whose teeth are coming ; it would be better to clothe them warm, and keep them from the fire, even in winter, if the weather is not very severe, as they are subject to inflammation and fever more or less, especially if many teeth are coming at the same time. Many nurses would rather consult their own feelings, than care for the infant's welfare with that affection and self-denial which they ought to obtain from them : indeed the welfare of infants depends materially on experienced nurses.

In writing upon this subject, brings to my remembrance having seen a little boy exceedingly weak, his teeth coming in irregular succession ; his anxious parents had a medical attendant for him twice a day ; he was kept in a warm room ; abundance of medicine was given, and but little nourishing food, and under the care of a young, inexperienced nurse. The mother was advised to have a nurse who was famed for bringing up weakly children : this was done ; the nurse undertook the management of the child entirely as regarded his food and medicine, and repeatedly examined his mouth : as soon as a tooth appeared ready, the nurse brought the child to me to have his gums lanced ; the child by this means was spared much of the irritation by teething, and in the space of eight months had twelve teeth through the gums, and was almost restored to health : he was bathed in tepid salt water three times a week, frequently taken out in the free air, and carefully nursed. At the sight of the child's rapid improvement I was truly astonished : at this time he was nearly three years of age ; it was proposed to bathe him in the sea, which no doubt would have proved beneficial, could the child have been divested of fear : this not being possible, I recommended

a residence near to the sea air, and at first to be only washed over with tepid sea water : the nurse did so, and great improvement followed.

Could children be divested of fear, considerable benefit might be derived by sea bathing every other day, especially if they are weakly ; but no advantage ought to be expected if a glowing warmth immediately after immersion is not felt on the skin, and if the child does not evince more cheerfulness after bathing.

Children often suffer much in obtaining their first teeth. Instances have occurred of children being born with one or more teeth through the gum, in the centre of the lower jaw, which is exceedingly distressing to the nurse, and painful to the child, as they soon produce inflammation in the gum ; having but very little socket, they ought to be extracted, as they soon become loose, and cannot be retained. The cause of these teeth coming so prematurely, is from their not having sufficient depth in the socket, and consequently have very little, if any root ; beside which, they have no protecting bone formed over them as the other teeth have, to keep them in their place, until maturity of root is formed.

As each tooth is enveloped in a separate membrane, the pressure forward in coming through the gum must be exceedingly minute, as the root, or lower part, has not finished its formation, and is in a soft and pulpy state : the alveolar process continues to form round the root, and being taper on all the fangs, thus becomes supported, and prevents pressure on the remaining part of the fang or root, which does not become complete until some time after the tooth makes its appearance through the gum : it therefore confutes the erroneous opinion of teeth coming through the gum by violent pressure. In

healthy children, it is sufficient for the cutting edge of the tooth to rest against the membrane, which soon divides ; after which the irritation gradually ceases ; the edge of the tooth then rests against the alveolar process, which, with the gum, absorbs, and gives easy access to the tooth, with little other inconvenience than laxation of the bowels, which is always salutary, and ought not to be obstructed : a little additional care to prevent cold is necessary.

Sometimes a rash, not unlike the chicken pox, appears,—this will also be found highly beneficial,—care should be taken to prevent the child taking cold, as the eruption suddenly disappearing is dangerous ; it ought rather to be promoted, or kept out, by giving a grain or two of James's Powder occasionally at night, to diminish any fever or inflammatory appearance of the gum, if any such symptoms attend the infant.

Should constipation of the bowels attend the child's obtaining its teeth,* five grains or more of rhubarb, with the same bulk of calcined magnesia, may be given occasionally, which will greatly relieve irritation ; or that quantity of rhubarb, with a grain or two of James's Powder, will not only relieve the bowels, but it will likewise determine perspiration to the skin, and thereby afford health and cheerfulness to the child : the quantity of rhubarb may be increased if it does not operate twice on the succeeding day.

If severe illness through teething be experienced, and a medical gentleman be near at hand, it would be safer to let him prescribe ; but where medical advice is not easily attainable to families, parents

* This dose is sufficient for a child one year and a half old, and should be varied in quantity according to the age.

would do well to have a small pair of scales, and proper weights, always by them; and to have well rubbed and mixed together the following ingredients:—Scammony, Calcined Antimony, Calomel, and Cream of Tartar, of each in powder a drachm. This preparation should be kept in a stopper bottle, and free from damp; when required, four or five grains may be given to a child a year old, and an additional grain may be added for each succeeding year, which will be a sufficient dose, to be repeated three or four alternate mornings: it is not adviseable to give this powder to children under one year, being a too active physic.* When convulsive fits occur, the lower part of the body may be bathed in warm water, for a quarter of an hour, unless the child may be faint or sick, and the foregoing powder administered as soon as possible, care being taken to prevent cold; it will cause perspiration, relieve the bowels, and restore the little sufferer to better health and spirits.

These afflicting circumstances frequently attend difficult dentition, although there may be but little appearance of swelling of the gum, or of any teeth sufficiently forward to allow of being lanced; but should any inflammation of the gum appear, and a rise distinctly felt, the skilful application of the lancet will do more towards restoring health than all the soothing medicines that can be administered. Unless the tooth be felt by the lancet, very little benefit will be obtained: it is also necessary to remark, that the lancet (which ought to have a fine edge) should be drawn at least a quarter of an inch across the front of the tooth, as nearly as possible,

* This powder should be given in gruel, or some thick vehicle, as otherwise the heavier ingredients will not be taken.

until it is distinctly felt : this divides the membrane, which immediately recedes from the tooth, and is thereby deprived of exquisite sensibility ; it ought to be done instantly, having previously considered the proper place, and opportunity, when the child is held in the most convenient position ; the operator sitting behind the child's head, with its face to the light, is best, as the lancet is easily concealed from view, and it may be done before it has time to be frightened ; at the same time, to give more efficient relief, a small blister may be applied behind the ears, and to promote a continued discharge for a few days, if necessary ; they can be dressed with a little mild blister ointment spread on lint.

It is to be regretted that the prejudice against lancing gums should ever exist ; for doubtless there are few parents who would not wish to decrease the sufferings of their children :* from this observation and practical experience, I do hope it will be the first thing attended to in obstinate cases of teething.

Many mothers and nurses have great faith in Soothing Syrups and similar applications, and have an idea that rubbing it on the gum causes the child to cut its teeth easily ; but the relief imparted thereby is from the friction, and not the syrups, as is commonly supposed ; for the natural pressure of the tooth against the membrane produces suspension of circulation, which causes the irritability of the child ; when friction is applied, it quickens the circulation in

* I have had pleasing demonstration of its efficacy to my children ; they have generally had fits in teething, and also have been very ill ; but I have been most agreeably surprised to find, that after having lanced the gums, and administered the last-mentioned powder, they have gradually regained their usual health in a day or two.

the gum, which collaterally relieves the membrane. Also the tranquil state of the child that follows the application of the syrup, may in some degree be attributed to the sweetness of it; for while the pleasant flavour continues sensible to the palate, the child forgets its pain from the enjoyment.

Again, other persons encourage their children to use hard substances, as coral, ivory, &c., which they allow the little sufferers, while in anguish, to bite its gums forcibly against, the effect of which is contusion of the vessels; it cannot divide the membrane, and it toughens the gum through which the tooth must pass; therefore it increases the difficulty; for after the tooth has made its way through the membrane in which it was enveloped, the bone that nearly covered it then absorbs: consequently the gum impedes the progress of the tooth much more than it would have done if simply rubbed with the finger. Some persons have expressed an idea, that if the gum is lanced, and the tooth does not soon after make its appearance, that the difficulty is increased; but it is an erroneous opinion, as the newly-adhered gum very readily gives way to the tooth.

CHAPTER II.

Of the Formation of the Second, or Permanent Teeth.

AT about three years of age, the shedding and rudiment of the second teeth are found to be contained nearly in distinct cells, formed in the alveolar processes of each jaw ; the second teeth are contained in sacs, united to the front teeth in the posterior part of the root immediately below the enamel, deriving its support from the gum, as *Plate 2, fig. 2*, which shows the manner in which the permanent teeth are produced and nourished to perfection. *Plate 2, fig. 3*, shows the sac given off by the first large molares, which appears immediately behind the twenty shedding teeth, at about the age of seven ; it is giving posteriorly a small sac, which is the embryo of another molar that attains perfection at about the eleventh or twelfth year, which also gives off another sac for the dentæ sapientiæ, or wisdom teeth, which may be generally expected about the twentieth year, although I have had occasion to lance the gum to let them through at the age of thirty-five, which is certainly uncommon, and in this case great inflammation is usually extended along the jaw a considerable distance.

At the age of five years there are forty-eight teeth in the jaws, twenty shedding, and twenty-eight second teeth, in various degrees of perfection. From the circumstance of the permanent teeth being formed behind the arch of the shedding teeth (which are much smaller than the second) in crowded confusion, may be understood the reason why the lateral incisores come down across, and are frequently so much less prominent than the front or eye-teeth. As

soon as they make their appearance, if it has not been previously attended to, sufficient space should be allowed them by extracting the shedding eye-teeth, and the new ones be frequently pressed forward with the finger.

In obtaining the second teeth, no precise time can be affixed to any of them. The order of their appearance, when first coming, is very similar to that of the shedding teeth. At the age of six or seven, two or three lower shedding teeth may be found loose; two of them more so than the third; but it is usually better to extract three of the loosest teeth, to prevent the new teeth crowding one partly before the other, or turning aside. About six months after may be expected the upper incisores; three of the loosest temporary ones should be extracted to give room; in about six or nine months afterwards, three teeth in the lower jaw should be extracted to make room for the lateral incisores, although they may not be through the gum; and as soon as they are in view, the upper corresponding temporary teeth should be removed, that the upper lateral incisores may no longer be crowded, nor kept in their posterior situation.

When they come through, if they are not in a line with the two centre teeth, it will be better to bring them forward by pressure of the finger, until they take their position in the regular arch; for if neglect is shown at this time, they will grow rapidly, and in shutting the mouth, instead of dropping over the lower teeth, they will shut inside of them, which, without great trouble and expense, will prove a lasting deformity, and is certain of increasing.

I have sometimes seen this deformity in as great extreme as *Plate 2, fig. 5*; when such is the case, it is my opinion the second teeth coming in the roof had better be extracted; the cuspidati, or

eye-teeth, will generally occupy their room, although they will not look so well as if all had come into the circle, yet much better than the deformity which has been ; and taking into consideration the extra room the bicuspidēs will thereby obtain, it will be a great advantage to them, as they frequently become carious, and that in a great measure is owing to their being crowded.

When the four upper and lower teeth come in proper circle, there remains but little doubt of the others following in right succession, if the second molares can be kept in till the age of eleven or twelve, as the molares occupy almost space enough for the cuspidati or eye-teeth, and the two bicuspidēs of each side of the upper and lower jaw.

The decay of the temporary molares, which is very frequent, may be generally traced to a want of cleanliness, the cavities on the crowns of them being deep, and filled partly with food, which undergoes a chemical change, whereby it becomes putrid and acid, which dissolves the enamel ; pain soon succeeds, and those teeth are frequently, from this circumstance, removed three or four years too soon ; this seldom fails to produce a two-fold evil :—first, the root not being absorbed, (as would have been the case if left till the eleventh or twelfth year,) gives much pain in extracting, and thus the child becomes timid, when other teeth of importance ought to be removed, to allow the front teeth room to take their proper places : secondly, their being removed too early, never fails to produce a crowded mouth, as the molares immediately behind will come forward and occupy two thirds of the space allotted to the second bicuspidē.

Children have frequently been placed under my care who have had one or more of the second temporary molares extracted, and

consequently I have not found room for the eye-tooth and bicuspidæ, and usually have been obliged to extract one of the two from each of the four places. When there is room for the bicuspidæ, it is owing to the eye-teeth coming down at a later period than usual, and the first bicuspidæ occupying its space, as in *Plate 2, fig. 4*, which eye-tooth is not in so great a want of room as just described; but yet the first bicuspidæ should be extracted, and the eye-tooth pressed back with the finger until it attains its natural position. No harm can possibly arise from a little extra room in that part of the jaw, as all the teeth naturally lean to the centre.

Parents, on perceiving their children's front teeth distant from each other, had better patiently wait until all the front shedding teeth are succeeded by the permanent ones, and grown to their length, instead of anxiously wishing to make them closer, by the application of ligatures or the like; for when the cuspidati, or eye-teeth, come down, a great alteration takes place: by natural pressure the teeth are removed towards the centre. It will generally be found that the teeth which promise to stand far apart will close sufficiently together when the twenty-eight teeth have attained perfection; and if they do not, it ought not to be considered a disadvantage, as they are not so liable to decay.

Teeth, while coming aside, are capable of great improvement; a mechanical force is necessary, to be applied by a piece of soft wood, cut to a suitable shape; but it is impossible to describe the manner of using it.

Children ought to be taught to brush their teeth every morning with cold water from the age of two or three years, as early habits of cleanliness is a great prevention of decay, and the brush should be a small one, and not hard.

CHAPTER III.

On the Lengthening of the Jaws.

THE anterior part of the jaws occupied by the shedding teeth alters but little in size when succeeded by the permanent ones ; it becomes rather more elliptical, the four incisors filling nearly the space of the six front shedding teeth ; the temporary molares occupy usually space sufficient for the eye-teeth and bicuspidés, which are much smaller than the molares ; the posterior molaré, if possible, should be retained until the roots are absorbed, and the bicuspidés ready to come in place of them ; if caries happen, they should be stopped ; or if the caries touch the permanent molares, they ought to be well cut out, and be kept clean by the frequent use of the brush : if this is neglected, the permanent molares being injured, will not fail to become carious in a short time, and also injure the bicuspidé as soon as it occupies its situation.

Each jaw gradually lengthens from behind the twenty shedding teeth, and at the age of six or seven has room for four large molares, which are part of the second set ; by about the twelfth year there is room behind them for four more ; and at the age of twenty, or twenty-one, for the dentes sapientes, or wisdom teeth. Thus the jaw lengthens only posteriorly, and forms an enlargement of the space which was occupied by the shedding teeth : this accounts for the greater prominence of feature in the face of adults.

CHAPTER IV.

Of the safest Method of Preventing the Upper Teeth protruding beyond their natural position.

SOMETIMES, when the second upper front teeth make their appearance, they are found to project almost the whole depth of the tooth over the part of the lower jaw more than they ought, meeting on the lower lip. I have witnessed several fruitless attempts to draw them in by applying gold plates and ligatures, and but a trifling improvement was the result of the attempt. After discontinuing the use of the gold plate for a few months, the teeth became nearly as prominent as before. In one of these cases I proposed, immediately on inspection, for the first bicuspid to be extracted on each side ; this was not listened to : all attempts, therefore, failed. Practical experience, however, convinces me, that in similar cases the extracting of two bicuspides is the first great means of future improvement ; and then, very frequent pressure applied with the fore finger, by holding the finger concave to make a regular pressure on the whole arch of teeth at once, is the only safe remedy.

When it happens to the lower jaw, the first thing to be attended to is, as I have just mentioned, the extracting of two teeth : if the upper jaw should then be found to close inside in the least degree, a contrivance to prevent the mouth shutting close must be attended to, and then a determined pressure with the finger applied against the lower arch of teeth, which will in most cases, with a little patience, have the desired effect.

I have had many opportunities of seeing the bad consequences of forcing teeth inwards to the desired position by mechanical pressure; and I do not remember having seen one set of teeth remedied, but usually in middle age they become either decayed, or loose in their sockets; and persons who in their childhood have undergone the treatment of mechanical force to their teeth, have at a mature age repented, and have attributed the early loss of their teeth to it. When the upper teeth incline inward, it is much safer to regulate them than to force them inward; the bone being in a growing state, it will expand, and the teeth seldom alter their situations after the pressure is removed.

These evils, in almost all cases, may be prevented by giving plenty of room for the four front teeth in each jaw; for if the upper ones incline inward, there is time to prevent their progress by continually pressing them outward with the finger, until they have attained their proper position; but this attention must be given before they touch the lower teeth, otherwise this simple treatment will prove useless, and the aid of a dentist will be necessary.

CHAPTER V.

Of Supernumerary Teeth.

THE dentist, in the course of his practice, sometimes meets with one or more supernumerary teeth, which if allowed to remain in the mouth, are certain to cause great irregularity of the other teeth, especially when they come down inside the mouth between the central incisors, as they force them apart; they differ very much from any of the other teeth, being generally small, round, and pointed: they should be extracted as soon as sufficient hold can be obtained. These kind of teeth occasionally make their appearance in the place, and instead of the upper lateral incisors; but they are seldom met with in the lower jaw, though I once saw too growing instead of the lateral incisors.

CHAPTER VI.

Of removing Caries from Teeth, and of Stopping them.

TEETH that are fractured by accident, if there is no previous predisposition to caries, seldom become worse if kept very clean, although the enamel may be broken off to the bone of the tooth or teeth ; but it is necessary to smooth the fractured part with a file, or other instrument, if better adapted for the purpose, which will ensure the preservation of the tooth.

This practice has led to the preserving of many valuable teeth that have become carious, by first removing the caries, and then forming the teeth to as near as possible the natural shape, and when performed in the early stage of the disease, is exceedingly important to the patient—far more so than if new natural teeth were pivoted in their places. I have known it to fail in some instances, the operative cause of which has been from neglect of brushing those parts of the teeth, and not using camphorated spirit,* which I have invariably recommended, and have found it to possess the most powerful antiseptic property of any application that could be used with safety to the teeth.

The most simple, and perhaps the best manner of using it, is to put a drop or two on a brush, previously dipt in cold water ; if the

* The best way of preparing it is to dissolve as much camphor in rectified spirit as it will hold in solution : half a pint of spirit will dissolve three ounces of camphor.

teeth are tender, warm water may be used, and that part of the tooth or teeth where the caries has been removed should be well brushed with it, at the same time not forgetting to brush the others. It is beneficial to acquire the habit of brushing tender teeth after every repast. This treatment will be found serviceable whenever the teeth become carious, if through distance, or other circumstances, it is inconvenient to go to a dentist who practises this mode of operating, although the teeth may not be cut, nor caries removed.

This method is not an untried experiment ; it was adopted by the late celebrated Mr. Wait, of London, nearly thirty years since. The very first time that I saw one of his patients, I perceived the value of the operation ; for the teeth that were cut showed no further indication of decay. This is not a solitary instance in which I have witnessed the skilful treatment of that much esteemed operator. The operation may in most instances be performed without pain, or the use of the file, and also without disfiguring the shape of the teeth, particularly of the front ones.

When caries take place in the interstice, (that is, between the teeth,) as it frequently does, my method is to cut it out from the inside of the teeth, as shown in *Plate 1, fig. 4*: this generally restores them to their original colour, and preserves their beauty, which is a great consideration if they are naturally well-proportioned, and of a fine shape.

When black, brown, or green spots appear between the teeth, it is not to be understood that this operation should be performed upon them ; on the contrary, if on examination the caries be found so slight as not to be through the enamel, it should be removed by

more gentle means than either filing or cutting, as the smallest portion of undecomposed enamel is more security to the teeth than any artificial protection.

During the last five years of my practice, many very bad cases have come under my notice, which, if they had been attended to at an early stage of the disease, could have been effectually eradicated without altering the shape of the front teeth, or causing the unpleasant sensation to the patient of feeling at first every breath of cold air. Carious teeth, if long neglected, become quite irremediable: in such cases, the places require to be either supplied with natural teeth pivoted to the roots, or put in with a gold plate: sometimes the caries are deep and narrow; it is then better, if possible, to stop them with gold or tin leaf after the decomposed part is removed. This requiring to be done in the interstice, is frequently a tedious operation, and demands the patience and ingenuity of the operator. After such an operation, the teeth should be closely inspected, and that for a considerable time, to ascertain if it has answered the desired end.

When teeth are too tender to allow of being permanently stopped, it is better to do it lightly with tin leaf; and thus many teeth may be preserved which could not bear a close firm stopping at once: by this means I have had the pleasure of saving many serviceable teeth, and after a short lapse of time these teeth have become sufficiently insensitve to admit of my stopping them in a more durable manner; and I have no doubt that many teeth thus treated might be preserved from further decay for many years. Such treatment will not perhaps meet the approbation of every one; and the prejudice is too justly founded, if they form their judgment from

such practice as we find sometimes adopted, namely, the highly injurious mode of putting a rudely-shaped piece of soft metal into the cavities without first removing the caries, and then sealing the top of it with a hot iron. I have known this actually done in a case wherein caries were between two teeth, so that two were stopped at once : the stopping could not fail of soon becoming loose, and then, by admitting food into both, rendered them putrid and exceedingly offensive ; and many teeth thus stopped were obliged to be extracted soon afterwards, though at first they looked well to the eye. Such was the practice lately introduced ; but by whomsoever adopted, cannot be too strongly condemned.

I have of late stopped teeth with a mineral composition, which has fully answered the desired purpose ; it is particularly applicable to teeth that are tender and rather loose, or that, from other causes, will not allow of the ordinary pressure. The manner of applying this mineral substance is by first removing the carious part of the tooth, then drying the cavity, and pouring a drop of the metal into it, when it instantly becomes solid, and by a slight pressure of the finger strikes into all the irregularities that the caries has occasioned in the tooth, and is a most perfect mode of filling it up, although not in all cases so lasting as leaf tin.

Stoppings pressed into carious teeth, without first removing all the caries, are of doubtful service, and are certain of producing a putrid taste. I know that many dentists have not the instruments suited to remove caries from teeth ; such specific aids ought to be as various as the situations of the decays that happen to the teeth : this will by the generality be thought almost impossible, and yet it is practicable in almost all cases.

If carious teeth have not proper attention given them to preserve them, the evil will be felt in the latter stages of life, from an undue pressure of air received into the lungs. I have frequently proved this by supplying sets, and parts of sets of teeth, which has removed this sensation : not only so, but food not masticated obliges the stomach to over exertion, which may last a long time in good constitutions without their feeling any considerable inconvenience ; but eleven persons out of twelve feel much distress while even half of their teeth remain of use.

Many ladies contract a habit of making use of their teeth in preparing their cotton or silk for the needle, thereby drawing the teeth forward, and otherwise producing much mischief ; for it will generally be found that the first upper front tooth that shows symptoms of decay, is the one most used for that purpose. Caries may sometimes be perceived on one or both sides ; at other times the tooth lowers from its socket ; the effect of which is, that the thick part of the tooth meeting in violent contact with the lower teeth, (and especially if the upper edges of them are not filed to give room,) becomes gradually thrust forward from its socket.

A question arises—Why do lower front teeth seldom decay ? To which I would answer, that the nerves of the upper teeth are sometimes scalded by taking hot liquids into the mouth, while the lower teeth escape injury by being defended with the lip and tongue, and are seldom lost when kept free of tartar : it is possible to destroy the circulation of a tooth by scalding the nerve—it is, however, certain to lose its proper colour, and if pain ensues, but little relief can be given by any means.

My observations in practice induces me to believe that not one lower tooth, comparatively to a hundred of the upper ones, are lost by decay. We cannot too justly appreciate the advantage derived by the upper teeth closing over the under ones, as it tends to their preservation by keeping them undisturbed in their sockets; the pressure on all the front teeth is then equal, and by it the natural arch of the teeth is preserved.

Extreme cold is quite as injurious to the teeth as that of extreme heat, and which requires no other demonstration than the recollection of the pain occasioned in the teeth after partaking of ice creams and the like, as it inflames the nerve as greatly as heat.

CHAPTER VII.

Of Inflammation in the Gums produced by external injuries, and the treatment necessary.

I HAVE frequently been solicited to account for the loss of teeth, and have stated the injuries they sustain from undue and partial pressure, occasioned in attempting to break nuts, stones of fruit, and other hard substances: when the delicate texture of the periosteum is considered, which covers the root of the tooth, by which it is exteriorly nourished, as it is the intermediate substance between the root and alveolar process, and is full of small blood-vessels, it proves its health to depend on regular circulation as much as any other part of the body.

Violent pressure is capable of arresting the action of the vessels, and also of contusing them partially; severe blows received on the teeth by accident, or otherwise, produce the same effect as the former; and it is frequently found, that instead of circulation of blood round the root, there is matter formed, and on the gum being lightly pressed, it exudes; the teeth may nevertheless last some years, but will always become loose, and the gums will continue to inflame, and thicken, while the teeth are retained, and absorption of the socket will proceed. Short taper roots are most liable to this disease, as their shape prevents them bearing ordinary pressure without injury. I have in such cases relieved the gums by frequent lancing, and recommended the use of liquid astringents in cases of extreme looseness of the gum, and the use of an astringent powder when of a firmer texture, particularly in cases where much tartar accumulates.

The thickening of the gum may be attributed to those vessels which formerly supplied the periosteum now discharged in the gum, producing irregular circulation.

It too frequently happens that one or more teeth become very loose by the absorption of their sockets : when this is the case, they ought to be extracted without loss of time, as it is impossible they can again become serviceable, and are sure to keep the gums in a continued irritation with every motion of the mouth : this cannot fail of injuring the sockets of the adjoining teeth. I have seen this disease spread rapidly from tooth to tooth, until the greater part of them have become loose or tender, and consequently useless, from not submitting to the loss of one or more teeth, together with lancing the gums, and the use of an astringent lotion, such as Tincture of Quinine, which should be frequently used with a soft brush, by brushing the lower gums upward, and the upper gums downward, to encourage the vessels to relieve themselves by bleeding, and promote a renewed circulation. I have known this method, by strict perseverance, produce firm and healthy gums where little such benefit was expected.

CHAPTER VIII.

Of the loss of Teeth by Tartar.

THIS substance is very similar in appearance and properties to the sediment found at the bottom of vessels in which water has been boiled. Tartar adheres principally to the teeth near the edge of the gum, and by its gradual accumulation, acts as a wedge, thereby occasioning a disunion of the gum with the teeth; and if its progress is not arrested by removal, the gums will recede and inflame; then will follow the absorption of the alveolar process, or sockets of the teeth, and in the same proportion the periosteum becomes extinct: thus good, sound teeth may be lost, if neglected for a length of time. This substance can be removed from the teeth, without occasioning the least pain or inconvenience to the patient; and due attention to brushing them afterwards, will be the means of preventing the tartar forming again to any great extent: with some persons it accumulates so exceedingly soon, as to render the brush and water insufficient to prevent it; in such a case a little powder may be used occasionally with very good effect, which should be astringent and antacid.

The instruments made use of by some dentists for the removal of tartar are not suitably adapted for the purpose, being too thick at the edge and too sharp; it escapes the portion of tartar that proves so very destructive to the teeth that remains between the gum and the tooth, and an ill adapted instrument injures the polish of them, by scratching the enamel, which has a very unpleasant appearance, independent of proving highly detrimental to the teeth, by subjecting

them to become carious. If tartar is left between the teeth and gum, it never fails to increase, as it has an affinity for its own substance ; therefore it ought to be entirely removed in the first instance with thin-edged instruments ; and if the gums are inflamed, they should be lanced, and a proper brush made use of, with the requisite powder, for reducing the inflamed gum, and likewise to restore the polish on the teeth.

I remember, when residing in London, taking out with my fingers ten lower front teeth covered with tartar, and supplied the space with others : this was a case of extreme neglect and error, arising from the supposition that the teeth were in a decayed state, and irremediable, whereas, on the contrary, they were all perfect.

I have heard of some dentists using muriatic acid, and other equally-destructive methods of removing tartar from their patients' teeth. This is a diabolically-idle practice, and is by far more injurious to the teeth than the rudest instrument that can be made use of, as it immediately opens the enamel, which is a crystalline substance, into innumerable and imperceptible cavities, causing the teeth to change in colour and crumble away—at the same time causes pain.

A lady called on me, having her front upper teeth very black, with large cavities in some of them ; they could not be restored to their natural colour, having very little enamel left on them. I filled the cavities with my exanimated mineral, and it has fully answered my expectation. This lady informed me an itinerant dentist visited that part of the country where she resided, and persuaded her to allow him to clean her teeth : he did so, and they looked exceedingly white ; but in a few hours became painful to the touch. The lady applied to a dentist in Dublin, who burnt the surface of the teeth

with hot points of steel, and thus a beautiful set of teeth was for ever deprived of their comely appearance, and were rendered useless for a considerable time. This is not the only instance I have met with ; but it is the worst that ever came under my notice. If a little prepared chalk had been applied to the teeth immediately after the cleaning, the injury would have been much lessened ; and if a drop or two of camphorated spirit on a brush, first dipt in warm water, had been daily used, it would most probably have answered the purpose of preserving them, as they have since crumbled away.

A very eminent dentist in London (who was initiated in the profession by the same master as myself) adopts the same mode of removing tartar as I make use of, the instruments being thin-edged, and not liable to injure the enamel.

Persons where there is a great disposition to the deposition of tartar about the teeth, or otherwise have tender teeth and inflamed gums, would derive great benefit by brushing their teeth after every repast with proper brushes ; and it ought to be a rule with all persons to brush their teeth morning and evening, and occasionally to use powder.

When improper brushes are made use of, the gums generally suffer by it : I have frequently seen the bad effects of using large and very hard brushes, as they irritate the gums, and induce them to recede, thereby occasioning an acute pain round the edge of some of the teeth ; the cause of the pain is the exposure of a portion of the periosteum, which is the external covering of the root. Also, there are many kinds of tooth-powders in vogue, some of them extremely injurious to either the teeth or gums, which have prejudiced some dentists against the use of any powder.

We are aware that some of these powders are made to please the eye, and are composed of colouring matters deleterious to the gums ; some are made sweet to please the palate, and others are acid, which is an enemy to the enamel and teeth, and others again are little more than spices with essential oil : all such preparations are detrimental to the teeth, and gums, by urging the gum to recede, which subsequently leaves the roots bare ; but in the course of my practice I have had sufficient evidence to convince me that the use of powder is essentially necessary to preserve teeth from decay, and prevent the formation of tartar ; the powder I have recommended has, when used with attention, invariably had that effect.

There are many persons who use soap to clean the teeth, but the gums soon feel the effect of it : the barilla, employed in the manufacture of this article, is rendered caustic by the admixture of quick lime, which enters into the composition of it, and this caustic alkali is very destructive to the gums ; for after a continued use of it, they recede, and leave the periosteum of the tooth exposed, which frequently causes a pain nearly as acute as is felt in the touching of a nerve.

This disease of the gums is also occasioned by a continued use of Calomel, Blue Pill, &c. : where the former has been taken a long time, I have seen the enamel fall off the teeth in such a manner, that it was impossible to stop them. As it proves thus destructive to the enamel, may not the use of it in children greatly derange the tender formation of their teeth, and to it be attributed the honey-comb, or indented teeth, that are now so frequently to be met with ? Such teeth are rarely to be seen in persons of fifty or sixty years of

age, though not uncommon in the rising generation. Lancing the gums between the teeth, and the use of Tincture of Quinine, with a soft brush, passing it up and down the gum towards the points of the teeth, is one of the best methods to prevent any further receding of the gums, or, if much swollen, will reduce them to a proper thickness.

CHAPTER IX.

The Wearing of Teeth by Abrasion.

THE principal cause of abrasion is the upper and lower front teeth meeting in contact instead of the upper ones closing over the lower. This evil should be carefully ameliorated in years of youth when it occurs, which may be done by making the edges of the teeth very smooth, and preserving them so by passing a fine file over the edges whenever they chip or become rough. Those parts of the front teeth that so often meet in contact during mastication, may be moderately reduced by filing them, without any injury resulting from it.

Two cases of this kind, among many others, in which great inconvenience had been experienced, has particularly engaged my attention during my practice in this city. The one having met his teeth in contact, the lower ones being much harder than those of the upper, actually reduced the weaker of them to below the edges of the gum; the mouth could not be shut without wounding the blood-vessels and nerves, and in other parts bruising the gums.

It was thought necessary to destroy the nerves by applying the actual cautery to them, and to file the lower ones smooth, to assist mastication. I worked a large frame of gold to cover the whole of the gum, and the parts of the upper teeth which remained, and attached it to the only large molar.

This is termed a shield, which, with another, was alternately worn for nine years, and answered all the purposes of teeth in mas-

tication, as the lower teeth were tolerably good.* But in 1826, a violent inflammation settled in the sockets of this gentleman's teeth, and all were extracted from the lower jaw, and some roots from the upper : matter having formed round them, it was impossible to give health to the gums and retain the teeth. I then put in a complete row of artificial teeth, and set teeth on a gold plate for the upper, which is worn with spiral springs.

The gums do not become healthy immediately after such teeth are extracted, when so greatly diseased in the sockets and roots, nor do the edges of the socket soon absorb : this requires great attention on the part of the dentist where teeth are replaced, to relieve the lower parts of the gum from pressure as the higher parts recede.

The other case of abrasion I allude to was not of so distressing a nature, the set of teeth being nearly complete in number. This gentleman had for many years been living on what are called Captains' Biscuits, in lieu of bread ; his teeth being of weak texture, became excavated in many directions—the upper front teeth reduced to the thickness of a wafer, the lower ones worn to the gums, the grinding teeth worn down, some to the gum, others retaining their natural length, and others again resembled front teeth in shape. The sharp edges I carefully smoothed with a file, reduced the inflamed gums by lancing, and recommended the gentleman to habituate himself to keep his teeth in a little degree apart when not in use for mastication, that they might not be uselessly worn away, and I find his teeth are not perceptibly worse during the last three years.

* The celebrated Mr. Wait, of London, saw and admired the contrivance of a similar one that I made for the late Marquis of S——.

I have seen rows of teeth that resembled saws meeting together, and from it proceeded much mischief, which might have been entirely prevented by timely aid ; and have had frequent opportunities of saving two years wear out of three, by reducing the higher points of both rows of teeth.

In similar cases to those just mentioned, it would be prudent to give them every attention at the commencement of the edges breaking away ; for by filing them smooth and shaping them, their youthful appearance would be restored, and be the means of preserving them many years more than they could have lasted without the attention proposed.

It may appear singular that all the teeth of one mouth should not be of equal hardness ; yet so it is, that some teeth retain nearly their perfect length, while the adjoining ones, and some in the opposite jaw, may be half worn away, although all may meet in exact contact.

CHAPTER X.

Of Pivoting, or Grafting Teeth.

THIS excellent mode of supplying natural teeth affords, when skilfully practised, pleasing satisfaction to both the dentist and patient, as it defies the minutest observation, and is to be preferred (whenever it is practical) to any other method of affixing teeth.

When any of the front teeth become unsightly and carious, beyond the possibility of much improvement, the part remaining should be reduced with a file to the level of the gum, or by any other means that can be more easily borne by the patient. The natural cavity of the nerve requires to be opened sufficiently large, to admit of a gold pivot for the support of the new natural tooth that is to be replaced ; the gold pivot is screwed firm into the new tooth, and after being accurately fitted to the root, attention should be given to prevent its bearing against the adjoining teeth ; it requires also to be made sufficiently thin, to prevent pressure from the under tooth, for in such case the newly-pivoted tooth would loosen, or become painful. This operation, when hastily performed, will produce an inflammation of the root, and a swelled face ; and being ever anxious to avoid the excitement of such unpleasant symptoms, my practice has been not to permanently fasten teeth at once to newly-prepared roots, however perfect the state of them may be. Roots that have not been prepared for pivoting, should have the pivot of the tooth rather loosely inserted at first, and then in two or three days, if no pain has been felt, it may be firmly fixed. It is considered by some dentists

a waste of time ; but practical experience convinces me of its being the safest, and consequently the best method to adopt.

By having always pursued this course of operating, I have rarely known my patients to suffer inconvenience from the operation of pivoting, although I too frequently hear of frightful ulcers, swollen faces, and great pain occasioned in pivoting teeth ; but have always found on inquiry it was done in a hurry, either by not drying the cavity, or fixing the tooth with great pressure, which very few roots will bear at once without producing pain or inflammation, unless they have had teeth pivoted to them at a former period ; at other times the pivot has been as long as the cavity ; this, with the least degree of moisture in the root, will compress the remaining part of the nerve, thereby increase the evil, as moisture of any kind, however compressed, will occupy a certain space ; and again, I have frequently seen instances of a newly-pivoted upper tooth meeting in close contact with the corresponding lower ones, so as to prevent the other teeth closing when the mouth was shut, or else have been made to lean hard against its companion : either of these occurrences must produce great pain, as it causes violent pressure on the periosteum of the roots of both, thereby impeding circulation. If on preparing the root to pivot a tooth, the nerve is found to remain, it must be destroyed by inserting a point of red hot steel, the pain of which is not so acute as is generally imagined ; and timorous ladies have induced me to gradually destroy the sensibility of the nerve by introducing the hot steel more than once.

When natural teeth are well pivoted, by that is to be understood the employing of suitable teeth for the purpose, so as to accurately imitate the shape, colour, and class of each individual's remaining

teeth: the fastening of the teeth, when applied in this manner, is not discerned, which is an important acquisition. The evil of pivoting an improper coloured tooth is readily perceived, by its being either a shade too dark or too light, which necessarily has an unsightly appearance.

My readers will perceive that a dentist must have an extensive stock of natural teeth to duly practise this, and other important branches of the profession; and in every case of pivoting, whether one or more teeth are deficient in an upper row, the teeth chosen to supply the loss should be placed, right or left, as their situation were in the mouth when by nature formed.

CHAPTER XI.

Of supplying Artificial and Natural Teeth.

ON this subject is to be considered the utility and benefit derived by supplying artificial teeth, in its improving articulation, assisting mastication, thereby promoting digestion, on the regular functions of which depend the health of the body, and also the improvement of countenance that will necessarily result in the wearing of artificial teeth, by preserving the symmetry of the mouth. For this purpose the teeth of the hippopotamus, commonly called sea-horse, is generally chosen, being the most hard, white, and durable substance that can be employed for the purpose, although by some dentists the teeth of other animals are made use of; but they are deficient in some of the necessary qualities for which those of the hippopotamus are preferred. These teeth are of a curved shape, and weigh from one to seven pounds; they are partly cased with enamel, which closely resembles that on human teeth. The enamel is naturally formed in ribs, which causes them to be peculiarly adapted as a substitute for natural, or human teeth.

The making of artificial teeth requires a proficiency in mechanical art, which can only be acquired by much patient labour; and it is the correctness with which they are fitted to the mouth, and the ease with which they are worn, that constitutes their excellence.

The fixing of natural teeth on gold plates to supply deficiencies is a method now generally adopted, and in most respects is far preferable. The long existing prejudice against the wearing of natural

teeth is rapidly declining. Natural teeth when supplied in this manner, if properly selected, cannot be detected by any difference in the colour or shape from the original set, especially if such means are employed as have of late years proved so durable, and which is practised by the principal dentist in London ; it is the most perfect method in use, and cannot possibly be exceeded by any other.

It is the common opinion of persons who require artificial teeth, that they cannot have them without submitting to the loss of their remaining teeth. I am aware that some dentists would recommend the loss of them ; but it is very injudicious to remove any sound teeth, or sound roots, as the roots may be filed smooth, and the nerve cavity stopped with gold, which renders them useful in assisting the gum to bear pressure from the artificial teeth when in the act of mastication.

When persons wish to have a part, or set of teeth, those which remain (if any) should be preserved by all possible means, by stopping them if carious, and removing any imperfections that may exist ; they will then be found eminently useful in supporting parts of sets ; and if too few teeth remain to support a part of a set, they will greatly promote the comfort of wearing a set, which is worn with springs, by steadying it.

The principal cause of failure with some dentists in fitting teeth that they can be worn comfortably, is, the imperfect mode of obtaining a model of the mouth ; and some dentists cannot, by their method, be certain that the model taken is a true fac-simile of the mouth ; yet the well fitting of teeth chiefly depend on the correctness of the model.

As I have an improved method of taking a true fac-simile of the mouth, it has rarely occurred that a part, or set of teeth, made by me during the last six years, has failed of fitting correctly ; and yet so complex is the art of putting in teeth so as to be worn with perfect ease, that the greatest attention will ever be necessary, from the occasional peculiar state of the ligaments, and shallowness of gum, from which alterations, that could not be foreseen, become necessary to perfect them.

Very rarely does any peculiarity exist in the mouth as to render a supply of teeth on the last mentioned plan impracticable, and they may generally be applied so as not to be discerned from the teeth that were formed there by nature.

Gold plates, for the purpose of setting teeth on, ought invariably to be made of one piece of gold. A set of teeth recently came under my notice, made by a person who called himself a dentist ; the gold plate was made of seven pieces, soldered together in a rude manner with silver solder, of which brass constitutes a two-third part ; and by the saliva of the mouth acting on it, the teeth had become green. Those who make such sets of teeth may be rapidly getting money, as it will occupy but little time in completing them ; but common honesty is wanting whensoever it is practised.

I have frequently seen small gold plates, of which the fastenings intended to clasp round the remaining teeth to support the plates, have been so very stubborn, as to entirely defeat the purpose desired, by their loosening the teeth to which they are attached. It is this imperfect kind of workmanship that prejudices many persons against wearing artificial teeth, as they imagine the destruction of those to which the plate is attached must be inevitable ; and the

prejudice would not be unjustly founded if this was the summit of the art; but, on the contrary, those men who pursue such mode of practice must be ignorant of the delicate construction of teeth.

The clasps of a gold plate ought, therefore, to be made pliant, so to allow it to be often taken out, and replaced without experiencing the least pain or inconvenience.

When various diseased roots and teeth are extracted, in order to prepare the mouth for the comfortable reception of a new supply, it is advisable to fill the vacancy for the first three months with common artificial teeth, as by the expiration of that time the edges of the sockets from whence the teeth were extracted will absorb, and the gums will become firm. From neglect of this precaution on the part of the dentist, many persons, by immediately wearing a set of teeth on gold plates, have suffered severely from unequal pressure, occasioned by the unsettled state of the gum, which have caused many persons to lay the teeth aside, and despair of the hope of its being possible to wear them again without pain.

In every instance of wearing parts, or sets of teeth, whether natural or artificial, it is essentially necessary for them to be occasionally taken from the mouth and well brushed, to prevent them becoming carious by the lodgment of food near the fastenings.

Uncleanliness with artificial teeth subjects them to decay, and also renders the breath equally as offensive as the want of cleanliness does with the natural teeth.

CHAPTER XII.

Of Fractured Teeth.

THE upper front teeth, from their exposed situation in the mouth, frequently receive fractures by accident. Many cases have come under my notice of youths, who, in their various amusements, have broken the corners of their front teeth, either by the receiving of blows in the mouth in an unguarded moment from balls, stones, and other hard substances; or by falling on the face, the teeth are violently struck: in these, and other similar ways, young persons receive fractures of their teeth.

The treatment of such cases depends upon the extent of the injury received. When the upper front teeth are disfigured by fracture, as in *Plate 1, fig. 1*, they may be improved by filing, as shown in the plate, without rendering the teeth liable to decay. If the fracture is to as great an extent as shown in *Plate 1, fig. 2*, it would be necessary to have them filed down to the gums, and teeth pivoted to their roots,* as shown in *Plate 1, fig. 3*.

When a blow has been received upon a tooth, so as to divide the nerve, and thereby loosen it, if the person be young it will become fast again, but will gradually lose its whiteness, and at length acquire a bluish or brown tinge. With persons of middle age, the like accident produces a disease in the upper part of the natural cavity of the jaw that holds the tooth; an ossific deposit is formed,

* Vide Pivoting or Grafting Teeth.

which, as it increases, gradually presses the tooth down and forward ; it then becomes loose, and must be extracted : when this is done, the gum rapidly heals, and the alteration it undergoes is so very trifling, as to allow of an impression being taken immediately after the extraction of the tooth, to form the model for replacing another.

CHAPTER XIII.

Of Exostosis of the Fangs or Roots.

By exostosis of the root, is to be understood an enlargement arising from a deposit of bony matter, which sometimes bears a strong resemblance to ivory. To the formation of this substance the teeth of some persons are very liable: there can be no other assignable cause for this deposit than a sluggish action of the vessels surrounding the roots; and its effect is an irritating pain in the tooth, occasioned by a distension of its socket. This kind of disease in teeth does not materially affect the gums; they may continue quite healthy, and whenever pain occurs, as no permanent relief can be given without extracting the tooth, it becomes requisite on the part of the practitioner, when the teeth are sound, to be very attentive not to mistake this disease for mere rheumatism.

The general appearance of teeth affected with this disease, after extraction, is the root being shorter, and less pointed at the end than most other teeth, as if the points had absorbed, and deposited its substance on the sides of the roots.

I have frequently extracted teeth of this description, having no apparent caries; but on cutting the tooth open, have found carious spots seated immediately over the nerve.

CHAPTER XIV.

Of Extracting Teeth.

THE extracting of teeth is a branch of the profession of a dentist, which demands especial care and proper judgment. Few operations are more repugnant to the feelings of the operator, as well as to those of the patient, than the extraction of a tooth.

It is generally an operation of nicety, and is often rendered a difficult one from the use of improper instruments, and inability of operators. The care and skill required in extracting teeth, is in consequence of the uncertain curves and entwining of the roots, which is often met with in mouths where the teeth are crowded, and which sometimes baffles the skill of the most experienced operator. The roots of the temporary double teeth of children, at the age of three to ten or eleven years, are particularly long, and spreading in proportion to the size of the neck of the tooth. This circumstance ought to urge the means of preservation, by keeping them very clean; for if it becomes necessary for them to be extracted within those years, and the roots are not absorbed, it becomes a painful operation. The common cause for extracting the temporary front teeth, is to prevent or remedy irregularity in the arrangement of the permanent teeth, and of the double teeth, on account of tooth-ache arising from caries.

Until the last few years, the key instrument was employed by almost all dentists for extracting the temporary teeth, although it

was a cruel method to adopt,* as the entire force in extracting a tooth by this means must be borne on the gum, which contuses it, and renders it longer in healing, besides the alarm it occasions the child. The instrument to be employed for this purpose should be the forceps, which should invariably be used in extracting temporary teeth, as by its use the pain of removing a tooth is very much diminished, and the tender sockets are not liable to be fractured: also another reason for the forceps having the precedence over the key instrument, is, the facility with which it removes children's teeth, the chief impediment being the resistance induced by their fears. Forceps are also to be preferred to the key instrument for extracting the permanent teeth, where circumstances will admit of their being used, and the pain is but trifling compared to the old method.

I have, after much trouble and expense, succeeded in obtaining them of the requisite shape and strength, so as to enable me to extract large double teeth with the greatest success, although I am aware there are some dentists who would pronounce it an impossibility to extract the permanent double teeth with forceps. Those of my readers who have had teeth extracted with the key instrument, will immediately be sensible of the advantages derived by the use of forceps in place of it. In the practice of using them, it is necessary to have one or more for each class of teeth: those for

* When it is necessary to extract a large carious shedding tooth on account of extreme pain, they have generally an ulcerous boil close to the tooth; therefore it would be unfeeling to use the key instrument.

the lower must differ from those for the upper. The manner in which the forceps are used, is by taking hold of the tooth upon the fang, as far as possible under the gum ; the instrument is then held fast in the hand, with a force just sufficient to hold the tooth firm ; and by moving it from side to side with a gentle motion of the hand, it relieves it from its socket ; when the tooth has thus been moved, it is drawn nearly straight out.

The teeth of some persons are so exceedingly firm in their sockets as to require extraordinary force to remove them, and sometimes their firmness resists all force that can be reasonably applied with any kind of instrument ; and in cases where this difficulty exists, and this force has been applied without success, no further attempts should be made, but means should be used to lull the pain by applying tincture of opium, or henbane on lint, or a few drops of tincture of pellitory root with opium. Should it happen that the crown of the tooth is broken off in attempts to extraction, it is not generally advisable to remove the roots, as they seldom give much pain afterward, in consequence of the nerve being divided. I have observed in these cases the disease is confined to the crown of the tooth, as this seldom or ever happens when it is situated in its fangs. Previous to extracting a tooth, if it is not loose, it is very necessary that the gum should be separated from the tooth with a lancet, as this prevents the gum being torn in extracting it, and also permits the instrument to take a firm hold under the gum on the neck of the tooth.

It is to be understood, that lancing the gum previous to extracting a tooth is only requisite to the permanent teeth, the gums having very little adhesion to the temporary set. Crowns of teeth, that

have become very weak from extensive caries, are seldom suited for the forceps; but such teeth may be extracted with more certainty by the improved key instrument.

The grand fault with the key instruments that are commonly employed, is the fulcrum, or bearing of the instrument, being too small, which produces, by the severe pressure, considerable inflammation of the gum. This evil might be remedied by the fulcrum being two or three times the size that is now commonly used, and by adapting the shape of the fulcrum to the part of the mouth to which it is intended to be applied.

This precaution obliges the dentist to have at least three key instruments,—one for the bicuspidæ, with an oval fulcrum; one for the molares, with a fulcrum nearly one inch long, and three eighths of an inch deep, with a slight hollow in the part to come opposite the tooth; and another for the lower dentes sapientes, or wisdom teeth, formed so as to extract it outwards, without bearing on the coronoid process. The key instruments that are commonly used are very unsuited for extracting the wisdom teeth; the situation of the claw should be at least one eighth of an inch from the end of the fulcrum: in the use of these instruments, much pain is spared the patient, by having for the purpose a claw well suited in shape and size. Small roots of teeth are generally extracted with an instrument called a punch, which is often successfully used where the forceps are not applicable, and the pain incurred by it is but momentary.

Thus I have endeavoured to explain and demonstrate the safest manner of extracting teeth; and as it has been my study and aim to mitigate the pain of this operation, so I trust that the explanation given under this head is sufficient evidence for my readers to judge of the best method of extracting teeth.

Hæmorrhage sometimes takes place after extracting a tooth; and if to an alarming extent, it may be assuaged by softening a small piece of bee's wax, moulding it with the fingers to the shape of the opening, and pressed partly into the vacuum, and held there by a small piece of lint put over it, and shutting the mouth: this will produce a slight inflammation in the parts surrounding the wax, and thereby stops the bleeding. Spirits of turpentine applied to the part on lint, with pressure, or a solution of alum in water, has been found to have the effect of stopping hæmorrhage, when other liquid styptics have been applied in vain.

CHAPTER XV.

Of Gumboils and Abscesses.

THE gums are very subject to these diseases, which in most cases proceed from carious teeth, occasioned either by a sluggish circulation in the vessels surrounding the roots, or the extending of the caries to the nerves of the teeth, giving acute pain, and producing ulcers, which are seldom removed without extracting the diseased roots or teeth.

When such teeth are neglected, the root inflames, and causes suppuration in the socket, which produces a swelling, and subsequently a discharge of matter. If a tooth is stopped that has an ulcerated fang, the discharge is increased by it for a few days : but no serious consequence is likely to result from it, unless violent shooting pains and swelling of the face ensues,—then the tooth should be extracted ; but it is not generally advisable to stop such teeth.

When an ulcer is visible over the second bicuspid, or first large molar, either should be extracted without delay, as one or more of the points of their roots may terminate in the *antrum maxillare*, and occasion a disease in it, not so readily cured as prevented. This disease is principally known by a foetid smell issuing from the nostrils.

It has been a received opinion, that roots having an ulcer over them ought not to be made use of for pivoting teeth to them ; but the first root I ventured to use for that purpose answered perfectly well, (by taking the precaution in fixing it as explained under the

head of pivoting teeth,) and the disappearance of the ulcer soon followed, which proves external air, received against the nerve, to be in some degree the cause of it.

This disease rarely attacks the lower front teeth, which leads me to conjecture that hot and cold liquids, which the upper teeth are more exposed to, is the chief cause of this disease.

Teeth that are loose have sometimes an ulcer in the gum over them, although they may be free of caries ; when they are extracted, the ulcer soon disappears, and an absorption in the point of the root is observed, which keeps up irritation within the socket, and produces that ulcerated state of the gum. I have often replaced such teeth in the mouth by fixing them on gold plates ; and, on cutting off the root, there has always been a putrid smell, which demonstrates the nerves to have been dead a long time.

It is better to submit to the extraction of a carious, or loose tooth, which has produced a confirmed abscess ; for it will always be noisome, and render the breath unpleasant.

The temporary double teeth of children are peculiarly liable, when carious, to ulceration at the root, which, if it happens before the age of ten, or eleven years, would be better to keep them in, if they do not loosen or become painful, as the too early removal of the second double teeth allow the seven-year old permanent teeth to come forward, and occupy part of the room allotted to the second teeth advancing beneath them ; but if ulceration proceeds so far as to expose the roots through the gum, and are painful, they must be extracted, be the consequence what it may : hence the great benefit derived from children acquiring the habit, at an early age, of keeping their teeth clean. Lancing the gum, and applying lunar caustic, will sometimes remove a small ulcer.

CHAPTER XVI.

Of the loss of Enamel, called the Denuding Process.

THIS has been considered by some dentists to be a disease. Some persons' teeth are more liable to it than others ; but I am of opinion that it proceeds from the use of hard brushes and coarse powders, or those of acid tendency, by slowly dissolving the enamel. That part of the tooth that is deprived of its enamel is where it was naturally the thinnest. Persons who rub the brush violently across their teeth, often denude them by that means ; also by the use of charcoal or beetle-nut powder, which are more harsh than is generally imagined. The evil may always be avoided by brushing the upper teeth downwards, and the lower teeth upwards ; for if, on the contrary, the brush is rubbed hard along the teeth in an horizontal direction, it will frequently wear the enamel away, especially if the front of the teeth are very convex. When persons discover the mischief produced by improper brushes and powders, they had better commence brushing their teeth after every repast with a soft brush, as teeth that have received this injury become carious if neglected.

My reason for not considering this appearance of the teeth a disease, is principally from the circumstance of never seeing, either the sides, or inside, of the teeth denuded of enamel, as the brush cannot be used with that force as is commonly applied to the front of the teeth. The first appearance of injury from the use of hard brushes, is the convex or prominent parts of teeth near to the gum, appearing more inclined to a yellow hue, than the other parts of the teeth.

CHAPTER XVII.

On restoring Articulation through loss of the Velum Pendulum Palati, and part of the bones of the Palate.

DURING my residence in London, I had an opportunity of supplying the loss of the *Velum Pendulum Palati*, and part of the bones of the palate, by an artificial continuation of palate, under the following circumstances :—In the year 1812, a gentleman, who had been exceedingly injudicious in his youthful days, had taken a great quantity of calomel—at the same time took cold, whereupon a contraction of the muscles of the jaw ensued, so much, indeed, that he could not admit the point of a spoon between his teeth, and wholly subsisted on a liquid diet for a considerable time. From the above-mentioned loss, the liquid which he applied to his mouth was with the greatest difficulty swallowed, as it obtained a more easy access through the nostrils than the throat. His father, who moved in a high sphere of life, and resided in the country, would not allow his son to remain an inmate of his paternal abode. He came to London in the greatest distress of mind, and applied to the gentleman, by whom I was instructed in the profession, to know if any remedy could be applied ; and so imperfect was articulation rendered by his loss, that we could not understand a single word he attempted to speak. My instructor endeavoured to cover the chasm, but failed in the attempt, having made it too small—a trifling effort in swallowing forced it into the vacuum of the nostrils, and it was with much difficulty extracted : the opening was nearly three inches posterior of the front teeth.—

I was permitted to exercise my ability, and commenced at ten o'clock in the morning, and continued without intermission until three, with but little expectation of fitting so difficult a situation, when at length, by one or two renewed efforts, I perfected it. It could not possibly have been effected, or even passed into the mouth, had there not been a small opening on the left side of the upper jaw by his having previously lost two teeth, through which I took my observation.

Having at length completed it, I was obliged to invent an instrument to pass into the mouth, and press it into its destined place, which could be drawn from the mouth without displacing it. The gentleman was most agreeably surprised to hear his own voice restored; he began to speak with comparative ease, and in a few days his speech greatly improved; he then wrote to his father, acquainting him of his success, and was again restored to his family.

It was not in my power to improve upon the piece of work under the foregoing circumstances, from its being impossible to take the wax out of his mouth, by which an impression is taken; therefore the only resource was to make and alter it by the eye and memory, aided by patience and proper mechanical instruments, until a correct fit was obtained.

This was the worst case of the kind I ever met with, as in every other case an impression of the defect could be taken in wax, which enabled me to fit it to the roof of the mouth with the utmost possible nicety.

Fig 1.

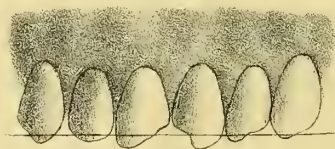


Fig 2.



Fig 3.

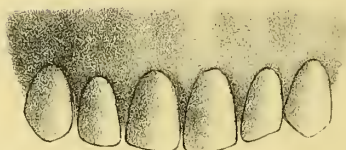


Fig 4.



PLATE 1.

FIG. 1.—The centre teeth broken, but not as to expose the nerve : the line shows how far they may be filed without fear of injury.

FIG. 2.—The two large incisors broken by accident as to expose the nerves.

FIG. 3.—The same, with two new centre natural teeth pivoted.

FIG. 4.—Shows the method of cutting caries from the inside of the upper front teeth without injuring their external shape : the dotted lines are intended to show where the caries existed.

PLATE 2.

FIG. 1.—A lower permanent incisor absorbing the root of the shedding one.

FIG. 2.—The second lower tooth enveloped in its membrane, showing its connexion with the temporary one, on which in some measure, depends its future welfare.

FIG. 3.—The sac enveloping the twelve-year old tooth, or second molar in embryo, given off from the first molar immediately behind the twenty shedding teeth ; which is also giving off a small sac for the dens sapientiæ, or wisdom tooth.

FIG. 4.—A want of room for the cuspidati, or eye-tooth : the small double tooth marked ✕ must be extracted.

FIG. 5.—The inside of the roof of the mouth, showing the lateral incisors coming down behind the two front teeth, and ought therefore to be extracted : having come unusually late, the eye-teeth have preceded them, which are much larger, and, if retained, will nearly fill the jaw.

Fig 1.



Fig 2.



Fig 3.



Fig 4.

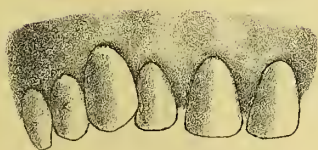
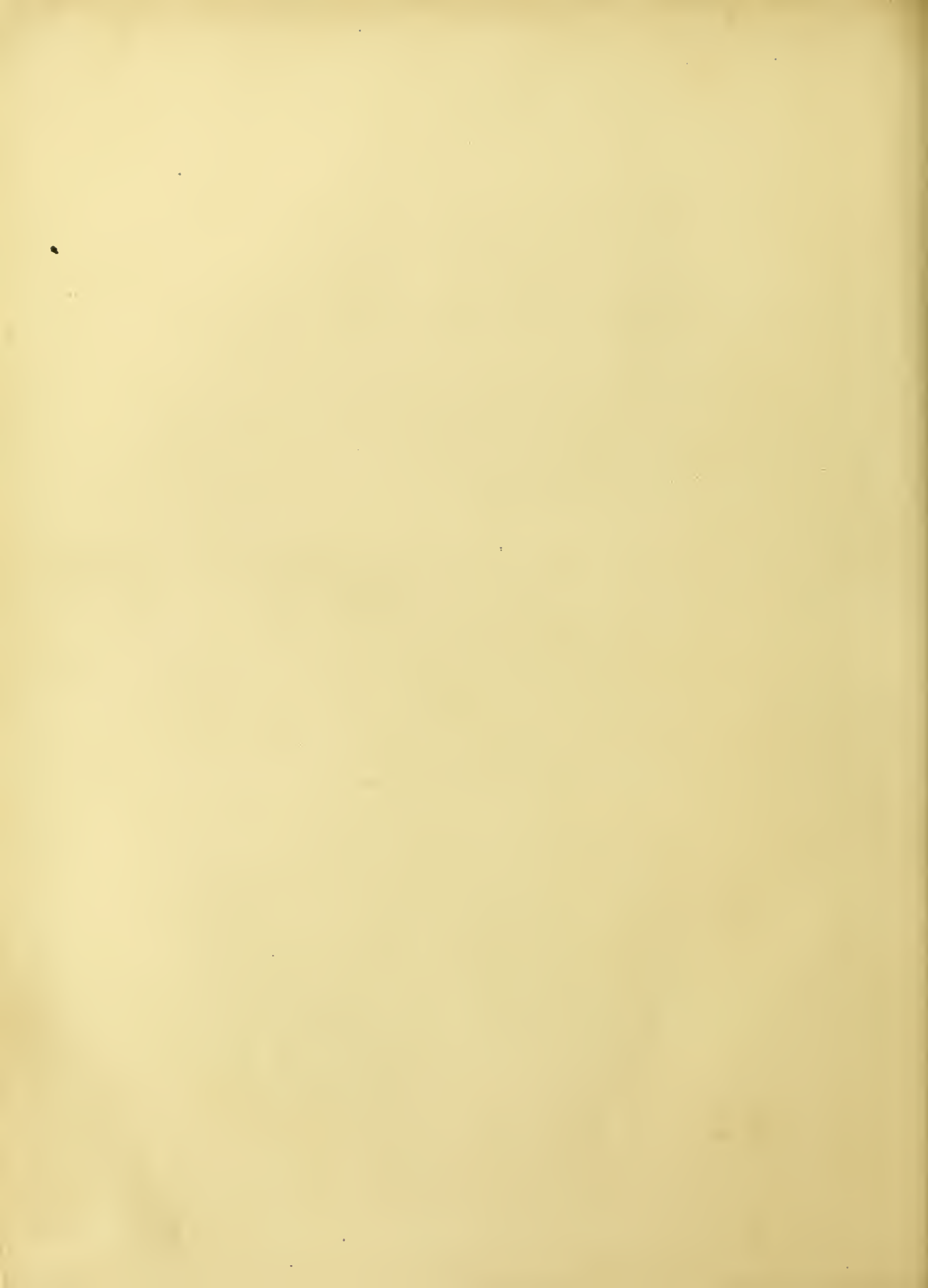


Fig 5.





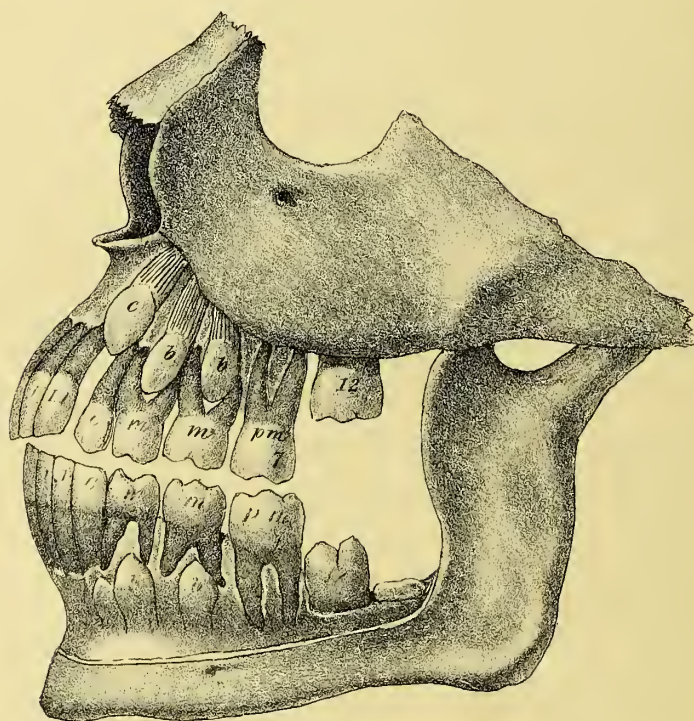


PLATE 3

shows the state of the teeth at about nine years of age; the four front teeth, marked *i* and *l i*, are the second front and lateral incisors of the upper and lower jaw. The next, marked *c*, are the temporary cuspidati, or eye-teeth. Those marked *m* are the temporary molares, which are generally removed at, or before the twelfth year, to allow the bicuspidates and cuspidati, marked *b* and *c*, to occupy their space. The large second molares, marked *p m 7*, are those that come about the same time, as the front shedding teeth loosen, in order to the new ones succeeding. Those marked 12 come at the age of twelve years.

